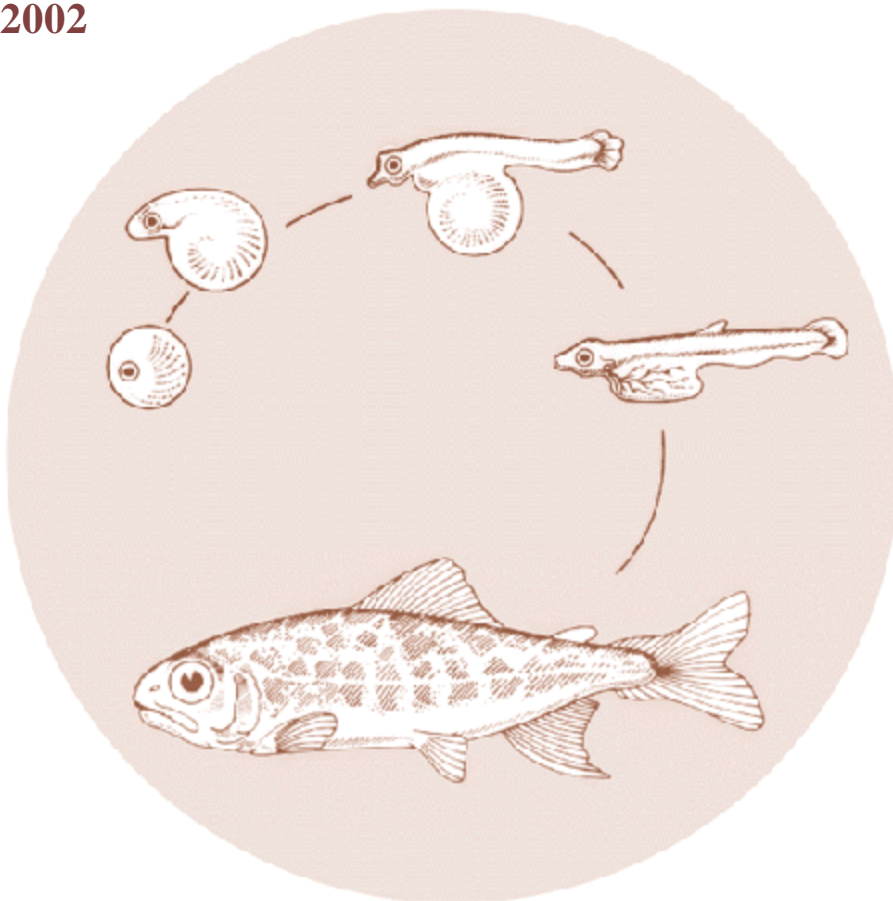


Monitoring and Evaluation for Grande Ronde Spring Chinook Salmon Program

Facility Operation and Maintenance

Annual Report
2002



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Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208

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Grande Ronde Supplementation O&M

Annual Report

1 January 2002 through 31 December 2002

Michael L. McLean
Ryan Seeger
Laurie Hewitt

Confederated Tribes of the Umatilla Indian Reservation
Department of Natural Resources, Fisheries Program
P. O. Box 638, Pendleton, Oregon 97801

Prepared for:

Ken Kirkman, Project Manager
U.S. Department of Energy
Bonneville Power Administration
Division of Fish and Wildlife
P. O. Box 3621
Portland, Oregon 97208-3621

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ABSTRACT

The Catherine Creek Acclimation Facility (CCAF) received 180,912 smolts from LFH. The size of the fish at delivery was 18.4 fish/lb. Volitional releases started 1 April 2002 with a total of 7,998 PIT-tagged fish (68,948 estimated total fish) migrating from the raceways during the volitional release period. Hourly detections of PIT-tagged fish showed that most of the fish left between 1400 and 2200 hours. The size of the fish remaining just before the forced release was 16.4 fish/lb. The total mortality for the acclimation period was 569 (0.3 %). No significant mortality related to disease was observed. The fish were fed a total of 1,968 lbs of food for the acclimation period. The total number of fish released from the acclimation facility in 2002 was 180,343.

The Upper Grande Ronde Acclimation Facility (UGRAF) received 201,958 smolts from LFH. The size of the fish at delivery was 17.4 fish/lb. On 3 March 2002 the water inflow to raceway 4 froze in the early morning hours and the entire raceway was lost. Volitional releases started 1 April 2002 with a total of 682 PIT-tagged fish (68,200 estimated total fish) migrating from the raceways during the volitional release period. Hourly detections of PIT-tagged fish showed that most of the fish left between 1500 and 2200 hours. The size of the fish left in the raceways just before the forced release was 18.3 fish/lb. The total mortality for the acclimation period not including raceway 4 was 402 (0.3 %). No significant mortality related to disease was observed. The fish were fed a total of 568 lbs of food for the acclimation period. The total number of fish released from the acclimation facility in 2002 was 151,444.

Maintenance and repair activities were conducted at the acclimation facilities in 2002. Facility maintenance work consisted of snow removal, painting of building, installation of backup water supply system, construction of steps to intake area, improvements to raceway standpipes, removal of gravel from intake area, and complete overhaul of 2 travel trailers. Montgomery-Watson-Harza (MWH) completed construction activities to both acclimation facilities and the Catherine Creek Adult Collection Facility (CCACF) in 2002. Their work included installation of larger intake manifold, new inflow valves on each raceway, new manifold blowout valve, and handrails and grating around raceways and the weir.

The CCACF was put into operation on 12 March 2002. The first adult summer steelhead was captured on 14 March. A total of 256 adult summer steelhead were trapped and released from 14 March to 6 June 2002. Peak arrival at the trap was the week of 15 April with a smaller second peak the week of 6 May.

The Upper Grande Ronde Adult Collection Facility (UGRACF) was put into operation on 22 April 2002. The first adult summer steelhead was captured on 24 April. A total of 36 adult summer steelhead were trapped and released from 24 April to 6 June 2002. Peak arrival at the trap was the week of 29 April which was only 1 week after weir installation.

The first adult spring chinook salmon was captured at CCACF on 20 May 2002. A total of 312 spring chinook salmon were trapped from 20 May to 31 July 2002. There was a total of 162 age 4 and 5 and 8 age 3 unmarked and 131 adult and 11 jack hatchery spring chinook salmon.

Peak arrival at the trap was the week of 17 June for both marked and unmarked fish. By peak arrival, 73.3% of the unmarked fish had been trapped compared to 62.7% of the marked fish.

The first adult spring chinook salmon was captured at UGRACF on 30 May 2002. A total of 105 spring chinook salmon were trapped from 30 May to 13 July 2002. There was a total of 101 age 4 and 5 and 1 age 3 unmarked and 3 adult hatchery spring chinook salmon. Peak arrival at the trap for the unmarked fish consisted of 3 descending peaks, 10 June, 24 June, and 15 July. The peak arrival for the marked fish was the week of 24 June (N=3). By the week of the second peak arrival, 72.5% of the unmarked fish had been trapped.

The broodstock collected and transported from CCACF was entirely from the unmarked fish trapped. None of the captive broodstock returns, which comprised the entire return of hatchery fish, were collected for broodstock. Broodstock was collected systematically over the entire return from 26 May to 15 July 2002. Every 5th adult male and female sampled was taken to LFH for broodstock. One unmarked jack was collected for every 5 adult males that were taken to LFH. A total of 33 age 4 and 5 and 5 age 3 fish were transported to LFH for broodstock which was 22.5% of the natural return trapped. When a fish was called a jack, male, or female at the weir we were correct 100, 73.6, and 93.7% of the time, respectively.

The broodstock collected and transported from UGRACF was also made up entirely of unmarked fish. Broodstock was collected systematically over the entire return from 30 May to 12 July 2002. Every other adult male and female sampled was taken to LFH (50%) for broodstock. The jack collection was similar to that at CCACF, although only 1 natural jack was trapped. A total of 48 age 4 and 5 and 1 age 3 fish were transported to LFH for broodstock which was 48.0% of the natural return trapped. When a fish was called a jack, male, or female at the weir we were correct 100, 84.0, and 100% of the time respectively. Fish that were actually females, tended to be called males at the weir.

Six weekly spawning surveys were conducted below the weir on Catherine Creek beginning 11 July 2002. During these surveys only 2 live fish were observed below the weir on 25 July and no carcasses were recovered. The trap was removed from Catherine Creek on 13 August.

On the Upper Grande Ronde River only two weekly surveys were conducted from 1 mile above the weir to 1 mile below the weir on 16 and 22 July 2002. No live fish were observed and 2 previously trapped carcasses were recovered above the weir. Three 3 live fish were observed and 6 carcasses were recovered (1 previously trapped) below the weir on 16 July. No live fish were observed above or below the weir and 1 carcass was recovered below the weir on 22 July. Seven of the 9 carcasses recovered were pre-spawn females. Because of high water temperatures and the fact that no live fish were observed immediately below the weir, the weir and trap were removed from the river on 24 July.

Weekly maximum temperatures at the Catherine Creek Adult Collection Facility (CCACF) ranged from 10.3°C the week of 29 April to 23.1 °C the weeks of 15 and 29 July. Weekly minimum temperatures at the trap ranged from 2.4°C the week of 13 May to 13.1 °C the weeks of 22 and 29 July. The hourly temperatures at the adult trap during the period of operation showed that the lowest water temperatures usually occurred between 0600 and 1000 hours and the highest water temperatures usually occurred between 1500 and 1900 hours.

Weekly maximum temperatures at the Upper Grande Ronde Adult Collection Facility (UGRACF) ranged from 11.5°C the week of 29 April to 28.3 °C the week of 15 July. Weekly minimum temperatures at the trap ranged from 0.5°C the week of 13 May to 10.9 °C the week of 1 July. The hourly temperatures at the adult trap during the period of operation showed that the lowest water temperatures usually occurred between 0500 and 0900 hours and the highest water temperatures usually occurred between 1300 and 1700 hours.

Maintenance and repair activities were conducted at the adult collection facilities in 2002. Facility maintenance work consisted of construction of trapbox and steps to weir, maintenance of weir, removal of gravel from the fishway, and weed abatement at CCACF. Maintenance work at UGRACF consisted of installation and removal of the floating weir panels and trapbox. We received the new trapbox after the trapping season had ended and constructed it in the shop to determine needs for 2003.

A total of 20 females, 13 males, and 3 jacks were spawned from the Catherine Creek stock spring chinook salmon at LFH in 2002. The peak spawning dates at LFH occurred on 16 and 30 August 2002 and there was no relationship between arrival at the trap and spawn timing at LFH.

A total of 21 females, 18 males, and 1 jack were spawned at LFH in 2002. The peak spawning dates at LFH occurred on 16 and 30 August 2002 and there was no relationship between arrival at the trap and spawn timing at LFH.

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INTRODUCTION

Anadromous salmonid stocks have declined in both the Grande Ronde River Basin (Lower Snake River Compensation Plan (LSRCP) Status Review Symposium 1998) and in the entire Snake River Basin (Nehlsen et al. 1991), many to the point of extinction. The Grande Ronde River Basin historically supported large populations of fall and spring chinook (*Oncorhynchus tshawytscha*), sockeye (*O. nerka*), and coho (*O. kisutch*) salmon and steelhead trout (*O. mykiss*) (Nehlsen et al. 1991). The decline of chinook salmon and steelhead populations and extirpation of coho and sockeye salmon in the Grande Ronde River Basin was, in part, a result of construction and operation of hydroelectric facilities, overfishing, and loss and degradation of critical spawning and rearing habitat in the Columbia and Snake river basins (Nehlsen et al. 1991).

Hatcheries were built in Oregon, Washington and Idaho under the Lower Snake River Compensation Plan (LSRCP) to compensate for losses of anadromous salmonids due to the construction and operation of the lower four Snake River dams. Lookingglass Hatchery (LFH) on Lookingglass Creek, a tributary of the Grande Ronde River, was completed under LSRCP in 1982 and has served as the main incubation and rearing site for chinook salmon programs for Grande Ronde and Imnaha rivers in Oregon. Despite these hatchery programs, natural spring chinook populations continued to decline resulting in the National Marine Fisheries Service (NMFS) listing Snake River spring/summer chinook salmon as "threatened" under the federal Endangered Species Act (1973) on 22 April 1992.

Continuing poor escapement levels and declining population trends indicated that Grande Ronde River basin spring chinook salmon were in imminent danger of extinction. These continuing trends led fisheries co-managers in the basin to initiate the Grande Ronde Endemic Spring Chinook Salmon Supplementation Program (GRESCESSP) in order to prevent extinction and preserve options for use of endemic fish stocks in future artificial propagation program. The GRESCESSP was implemented in three Grande Ronde River basin tributaries; the Lostine and upper Grande Ronde rivers and Catherine Creek. The GRESCESSP employs two broodstock strategies utilizing captive and conventional brood sources. The program began in 1995, with the collection of parr from the three tributary areas to begin development of captive broodstocks. The conventional broodstock component of the program began in 1997 with the collection of natural adults returning to these tributary areas.

Although Lookingglass Hatchery was available as the primary production facility for spring chinook programs in the Grande Ronde Basin, there were never any adult or juvenile satellite facilities developed in the tributary areas that were to be supplemented. An essential part of the GRESCESSP was the construction of adult traps and juvenile acclimation facilities in these tributary areas. Weirs were installed in 1997 for the collection of adult broodstock for the conventional component of the program. Juvenile facilities were built in 2000 for smolts produced by the captive and conventional broodstock programs that were to be released into natural

production areas of their natal streams. The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) operate the facilities located on Catherine Creek and the upper Grande Ronde River under this project. The Nez Perce Tribe (NPT) operate the facilities on the Lostine River under a sister project.

METHODS

Juvenile Acclimation

The Catherine Creek Acclimation Facility (CCAF) is located at rm 29.5 of Catherine Creek (Figure 1). Catherine Creek originates in the Wallowa Mountains and flows north to northwest entering the Grande Ronde River at rm 140. The Upper Grande Ronde Acclimation Facility (UGRAF) is located at rm 198.5 of the Grande Ronde River. The Grande Ronde River originates in the Elkhorn Mountains and flows north to northeast 210 rm, before entering the Snake River.

Each facility consists of 4 portable aluminum raceways lined with vinyl fabric (Figures 2 and 3). Each raceway is 86 ft long, 8 ft wide, and the water depth was kept at around 3 ft (2,064 ft³). At the CCAF, water was pumped directly from Catherine Creek into the raceways using a screened submersible pump powered by a diesel powered electrical generator. At the UGRAF, water was diverted from the Grande Ronde River into the raceways by gravity using a screened cement intake structure located about 600 ft upstream from the raceways. At both facilities, water in each raceway is drained through an 8 inch pipe back to the river below the water intake. A 26 ft travel trailer was placed at each facility to provide onsite housing for facility operators, who provided 24 hour watch and maintenance of the facility. The CCAF also had an above ground backup pumping system which consisted of a diesel powered pump with the intake placed directly into the stream. The facilities were designed to hold 31,250 fish per raceway at 20 fish/lb and a density of 0.76 lbs/ft³. Maximum flow design for the facilities was about 625 gpm/raceway.

Fish were transported to the facilities from LFH by ODFW in tanker trucks. The proposed acclimation period was from the last week of February to mid-April. The fish were fed once per day at a rate ranging from 0.2 to 2.4 % body weight per day (BWD) depending on the water temperature during the acclimation period (Moore-Clark feed rate guidelines, November 1999). Fish were allowed to volitionally leave the raceways the last 2 weeks of the acclimation period. At the end of the acclimation period, a sample of 50 fish/raceway were measured and weighed before the remaining fish were forced out. Passive Integrated Transponder (PIT) detectors were installed on the exit pipes before the volitional release to monitor the outmigration. Mortalities were removed daily and saved for ODFW pathology. The total number of fish released was estimated using ODFW Fish Liberation Reports and acclimation mortality records.

Project personnel completed maintenance and repair activities on facility grounds and the equipment needed to operate the facilities.

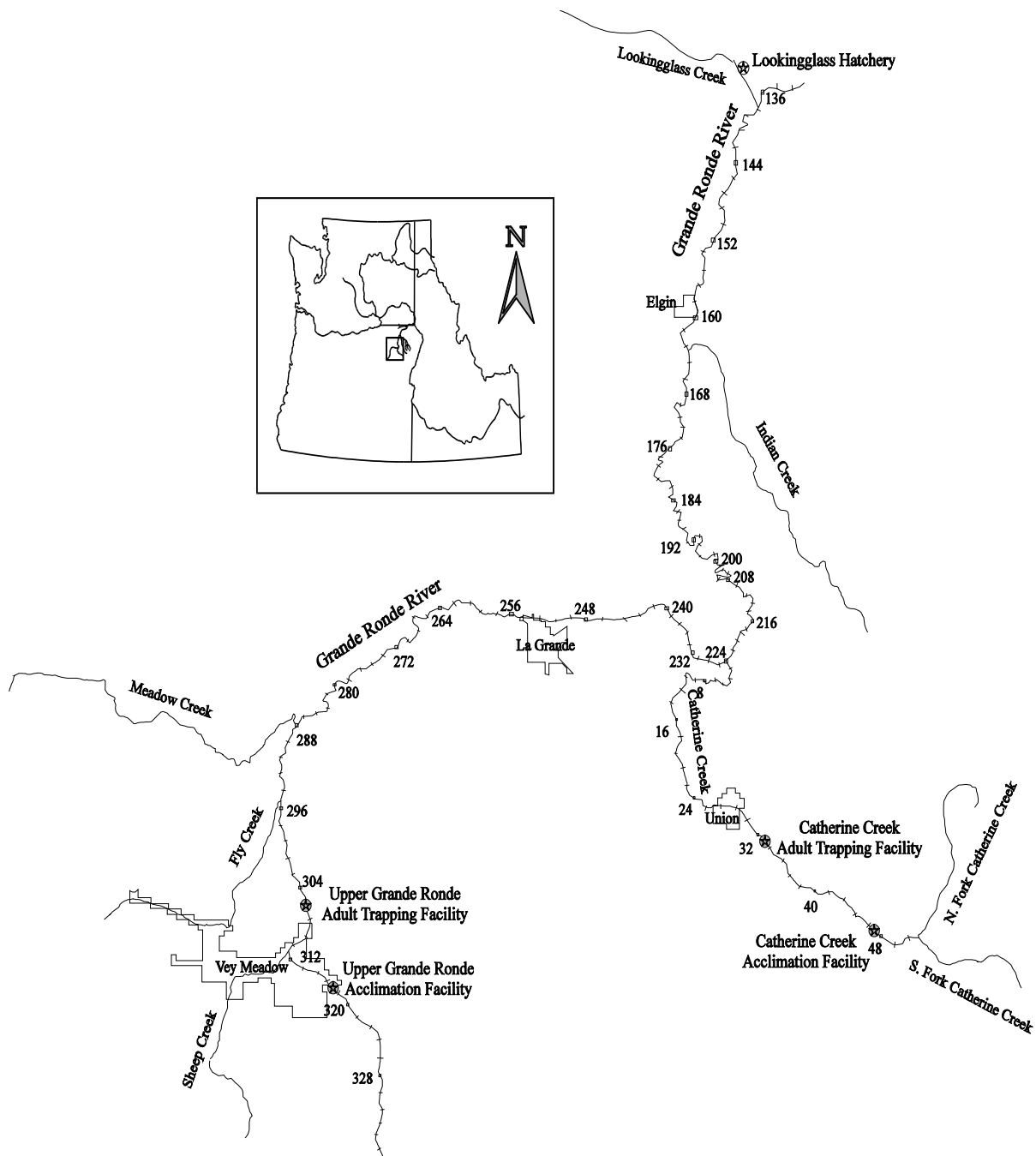


Figure 1. Map of the upper Grande Ronde River basin showing locations (rkm) of Lookingglass Hatchery and Catherine Creek and Upper Grande Ronde juvenile acclimation and adult capture facilities.

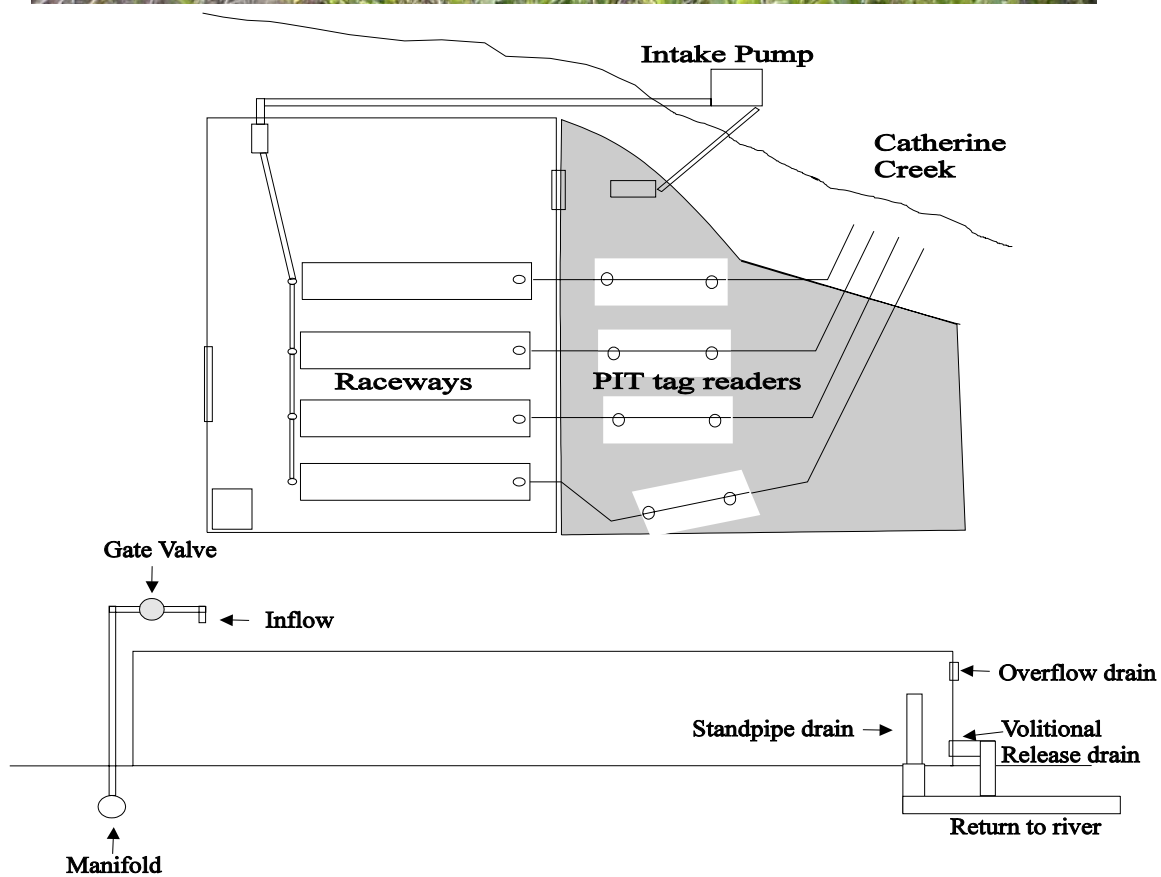


Figure 2. Diagrams of the Catherine Creek acclimation facility. PIT tag reader boxes in the shaded area are underground.

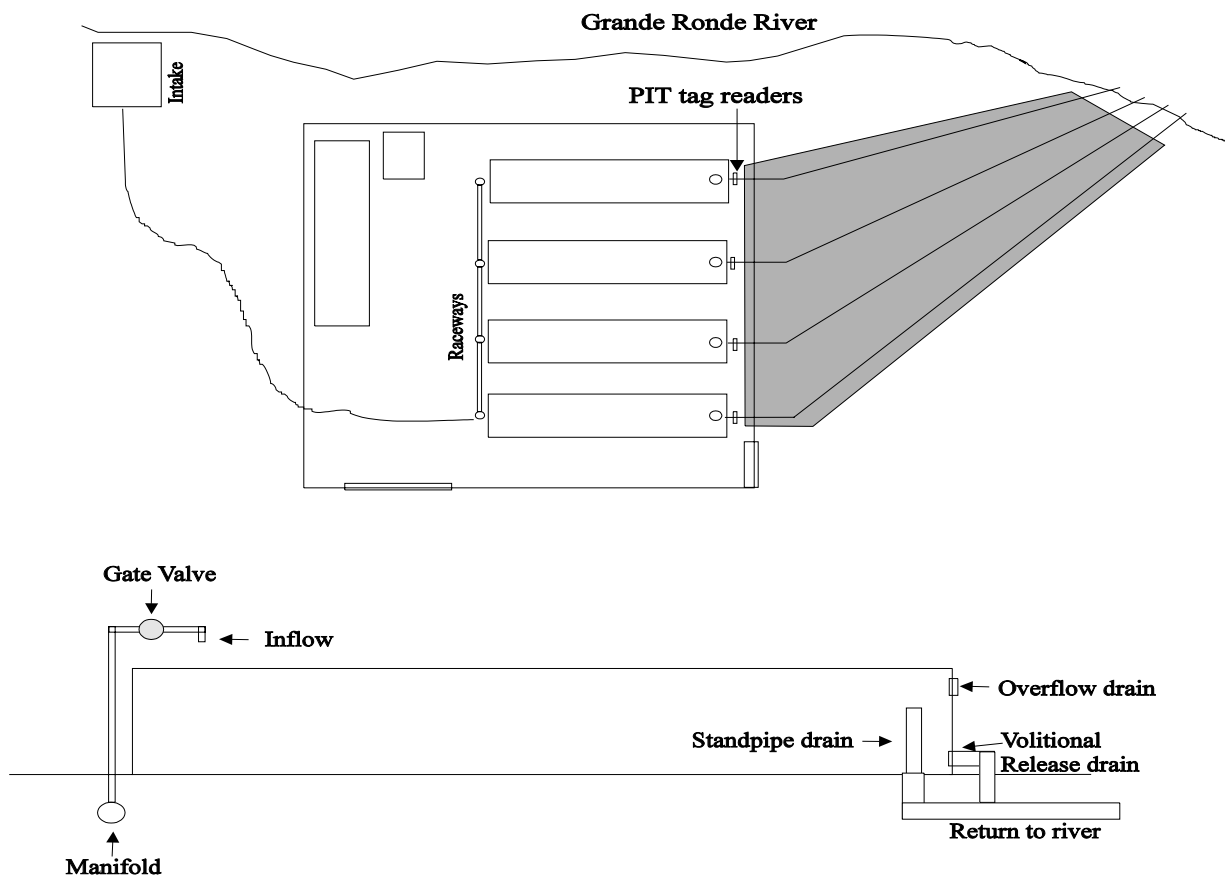


Figure 3. Diagrams of the Upper Grande Ronde acclimation facility. The shaded area where the return pipes are located are underground.

Adult Collections

The Catherine Creek Adult Collection Facility (CCACF) is located at rm 20.5 of Catherine Creek (Figure 1). The facility consists of a hydraulic weir which is attached at the bottom sill of a full channel width pool and chute type ladder (Figure 4). Trapping of adult summer steelhead and spring chinook salmon was accomplished by directing adults into an off channel trap (fyke opening) and holding area that is 25 ft long, 6 ft wide, and the depth was kept at about 6 ft (900 ft³). The Upper Grande Ronde Adult Collection Facility (UGRACF) is located at rm 191 of the Grande Ronde River (Figure 1). The facility consists of a floating weir that spans the entire stream effectively blocking upstream passage (Figure 4). Trapping of the adult summer steelhead and spring chinook salmon was accomplished by directing adults into a trapbox (fyke opening) located in the main channel near the bank that is 11 ft long, 10 ft wide, and the depth of the water in the trapbox was normally about 2.5 ft (275 ft³). The designed adult spring chinook salmon holding capacities for these facilities, at 10 ft³/adult, is 90 at CCACF and 28 at UGRACF.

A travel trailer was placed at each facility to allow for 24hr 7 day a week operation of the facility by facility operators. Traps were checked daily and water temperatures were taken with a pocket thermometer before the trap was operated and again in the middle of the day when water temperatures were thought to be the warmest. An onset recording thermometer was also installed in the trapboxes for hourly temperature readings. Handling events only occurred when water temperatures were below 18.3°C. If and when the maximum water temperatures exceeded 21.1°C for three consecutive days, trapping would be discontinued and fish would be allowed to pass freely until water temperatures dropped. Updates to any contingency plans will be made annually to reduce the amount of mortality observed.

Broodstock collection at the facilities is based on a sliding scale developed by co-managers in the basin (NMFS 1995, Appendix Table 1). The sliding scale was developed to allow for increases and decreases in the number of returning naturally- and hatchery-produced fish and to provide a basin specific approach to broodstock and natural spawner management. The scale is based on preseason population estimates and regulates the percentage of natural and hatchery broodstock to be retained and hatchery/wild ratios above the weir. Progeny from the captive broodstock program are not to be incorporated into the conventional hatchery broodstock. Jack management is also identified in the sliding scale. Fish collected for broodstock were taken systematically by sex and age (adult/jack).

During the trap check fish were individually anesthetized using MS-222 and fork length was measured to the nearest mm. Later in the season, as water temperatures rose, fish were processed earlier in the day when water temperatures were lower, in order to reduce stress. A paper punch was used to mark fish and collect tissues for genetics samples. A single punch on the right opercle plate was used to mark the fish that were released upriver as having been trapped. Tissues from opercle punches and one additional caudal punch were collected for genetics evaluation. Tissue samples

were preserved in labeled vials with 95% ethanol. Each fish was examined externally for marks, injuries or other physical conditions, and a preliminary determination of sex was made. Adults that are to be transported to LFH for holding and spawning are transferred from the trap to the CTUIR transport vehicle by using a water-filled tube or elevator system. Fish not transported to LFH were passed upstream after recovering from the anesthetic.

Fish collected and transported before 15 July 2002, received prophylactic intraperitoneal injections of oxytetracycline (10 mg/kg dose) and erythromycin (20 mg/kg dose) upon loading. Injections were not given to fish taken for broodstock after 15 July due to the fact that the broodstock would be reinjected at LFH on 1 August. Fish collected and transported after 1 August 2002 would again receive injections prior to transfer. Dosage of each antibiotic was based on estimated body weight from length data. Fish were individually marked using PIT tags injected into the flesh of the opercle plate. These PIT tags would help determine accuracy of the sex identification at the trap and to determine if run timing at the trap was related to spawn timing at LFH. Fish species that were captured incidentally, bulltrout (measured), whitefish, and suckers were released upstream.

Broodstock were transported from the weir site to LFH using a 240 gallon fiberglass tank mounted on a flatbed trailer (CCACF) and a 400 gallon stainless steel tank mounted on a trailer (UGRACF). The tanks were each equipped with an aerator and oxygen tank. Transport time to LFH from the weir site was about 1.5 to 2.0 hours. Target dissolved oxygen level in the tank during transport was 11 mg/l. Dissolved oxygen levels were checked mid way through the transport.

The possible effects of the weirs on fish behavior was evaluated by walking a one-mile segment of the stream immediately downstream of the weirs once a week. Live fish, carcasses, and evidence of spawning activities (redds, test digs) were recorded. ODFW staff, directed standard spawning ground surveys (Parker et al. 1995) on segments upstream and downstream of the weir in August and September and the same information was collected.

Project personnel completed maintenance and repair activities on facility grounds and the equipment needed to operate the facility.

Broodstock Activities

Lookingglass Hatchery

Assistance was provided to ODFW for the spawning of the Catherine Creek and Upper Grande Ronde River conventional broodstock at LFH. Broodstock was checked for ripeness once a week for the 6 week spawning period. Females and an equal number of males that were ripe were placed in PVC tubes and placed in an empty circular pond so they would be readily available for spawning the next day. A spawning matrix was developed based on the number of ripe females and males and the sex ratio of the entire population this was usually 2 females crossed with 2 males.



Figure 4. Photos of the Catherine Creek (top) and the Upper Grande Ronde (bottom) adult broodstock collection facilities.

On spawning day, the ripe females were taken from the captive brood building to the hatchery building for spawning. The females were anesthetized using MS-222 one family group (usually 2 fish) at a time. The fish were again checked for ripeness before being dispatched by a blow to the head. The fish were placed in a rack and bled by cutting the tails. The body cavity was then opened over a colander to catch the eggs and to drain the ovarian fluid. The eggs were divided into buckets awaiting the male contribution. The males were spawned into cups at the captive brood building. The cup was placed in an ice chest and taken to the hatchery building for completion of the matrix. Once the gametes were mixed, ODFW staff placed the eggs in incubators located in the hatchery building.

Captive Broodstock

Assistance was provided to ODFW for the collection of parr from Catherine Creek, Upper Grande Ronde River, and the Lostine River that are used for the captive broodstock program in 2002 (ODFW 2003). Assistance was also provided to ODFW for the spawning of the Grande Ronde Basin captive broodstocks at Bonneville Hatchery in 2002 (ODFW 2003).

RESULTS AND DISCUSSION

Juvenile Acclimation

The CCAF received 180,912 smolts from LFH on 26 February 2002 (Table 1). The size of the fish at delivery was 18.4 fish/lb. The fish were allowed to volitionally leave the raceways beginning 1 April 2002. Any fish remaining on 15 April were forced from the facility after 1700 hours. During the volitional release period there was a total of 7,998 PIT-tagged fish scanned. Based on the number of PIT-tagged fish in the population (11.6%), an estimated 68,948 fish left during this time with several peaks in movement (Figure 5). Hourly detections of PIT-tagged fish showed that most of the fish left between 1400 and 2200 hours (Figure 6). The size of the fish remaining just before the forced release was 16.4 fish/lb. The total mortality for the acclimation period was 569 (0.3 %). There was a mortality incident (418 fish) when the intake pump stopped unexpectedly and the inflow pipe to one raceway partially froze. When the pump was restarted the water pressure from the pipe killed the fish. Mortality sampling by ODFW pathology showed very low signs of disease (personal communication, Sam Onjukka, Fish Pathologist, ODFW La Grande). The fish were fed a total of 1,968 lbs of food for the acclimation period. The total number of fish released from the acclimation facility in 2002 was 180,343.

The UGRAF received 201,958 smolts from LFH from 27 to 28 February 2002 (Table 1). The size of the fish at delivery was 17.4 fish/lb. In the early morning hours of 3 March 2002 extremely cold temperatures at the facility caused the water inflow pipe to one of the raceways to freeze stopping the water supply to that raceway and because the alarm for water inflow was frozen in the off position the facility operator did not become aware of the situation until later that morning. This incident resulted in the loss of the entire raceway (50,112 fish). The facility continued to operate with the 3 remaining raceways through the cold spell with increased awareness of pipe and intake freezing. The fish were allowed to volitionally leave the facility beginning 1 April 2002. Any remaining fish on 15 April were forced from the facility after 1700 hours. During the volitional release period there was a total of 682 PIT-tagged fish scanned. Based on the number of PIT-tagged fish in the population (1.0%), an estimated 68,200 fish left during this time with several peaks in movement (Figure 5). Hourly detections of PIT-tagged fish showed that most of the fish left between 1500 and 2200 hours (Figure 6). The size of the fish left in the raceways just before the forced release was 18.3 fish/lb. The total mortality for the acclimation period not including raceway 4 was 402 (0.3 %). Mortality sampling by ODFW pathology showed very low signs of disease (personal communication, Sam Onjukka, Fish Pathologist, ODFW La Grande). The fish were fed a total of 568 lbs of food for the acclimation period. The total number of fish released from the acclimation facility in 2002 was 151,444.

Table 1. Acclimation data for Catherine Creek and the Upper Grande Ronde facilities.

Facility	Fish received	Size fish/lb	Accl. period	Volit. began	Feed Fed (lb)	Total mort.	%	Temp.°C		DO mg/l		Est. Vol. migration
								min	max	min	max	
CC 02	180,912	17.4	2/26-4/15	4/2	1,968	569	0.3	0.0	10.5	7.0	13.3	68,948
GR 02	201,958	18.4	2/27-4/15	4/2	568	50,514	25.0	0.0	3.5	9.2	12.7	68,200

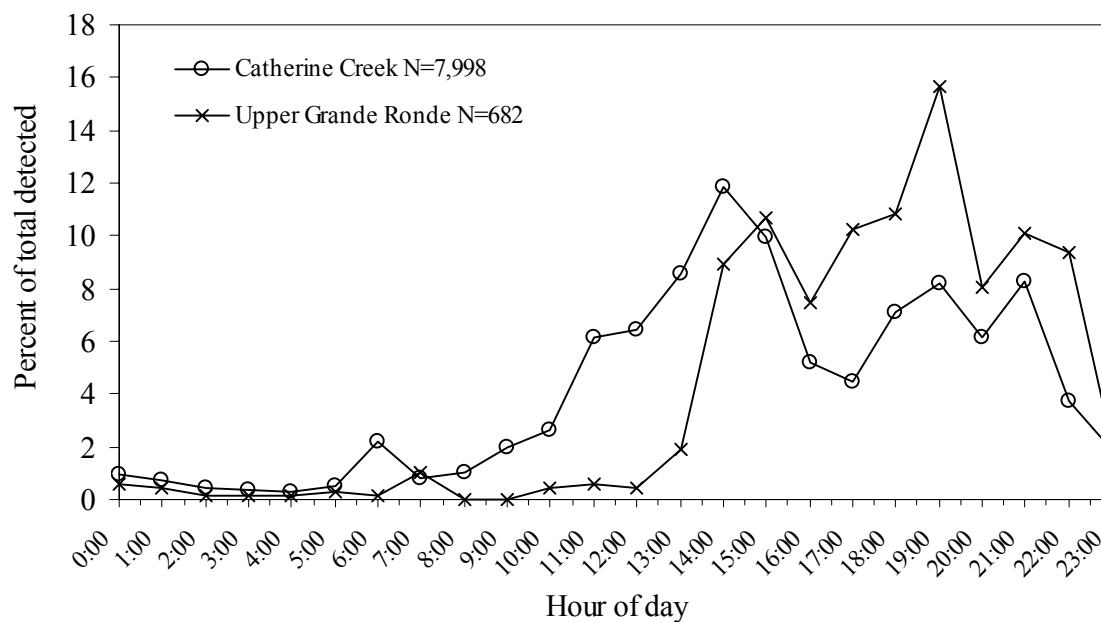


Figure 5. PIT tag detections of fish leaving the raceways during the volitional release period at the Catherine Creek and Upper Grande Ronde acclimation facilities in 2002.

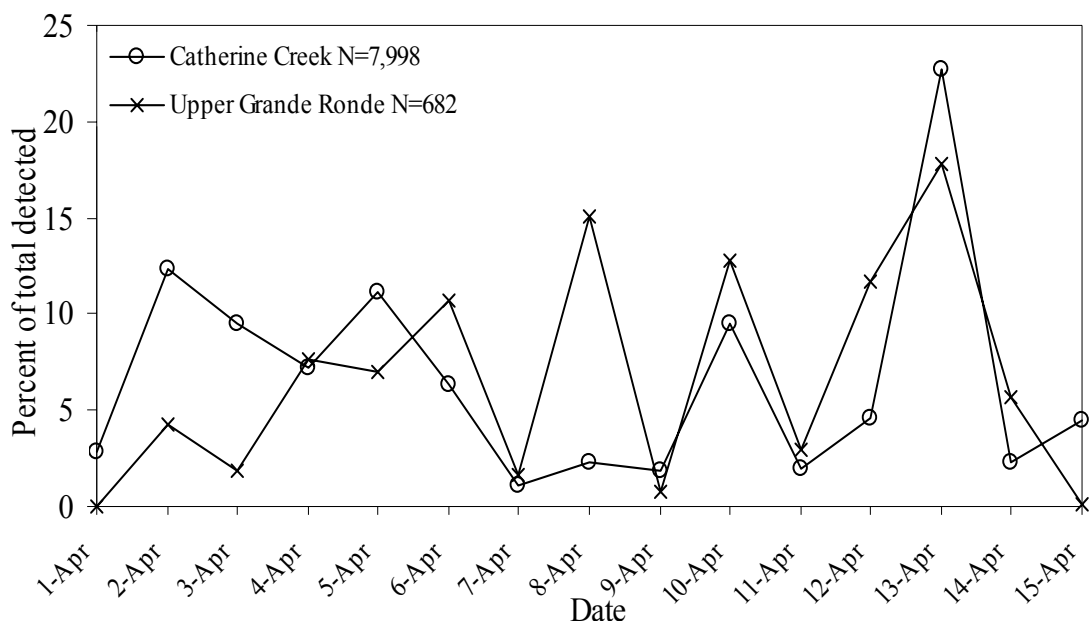


Figure 6. Hourly PIT tag detections of fish leaving the raceways during the volitional release period at the Catherine Creek and Upper Grande Ronde acclimation facilities in 2002.

Due to construction work on the raceways at LFH, all of the production at the hatchery had to be transported to the acclimation facilities for a single acclimation beginning in late February. This resulted in rearing densities ranging from 1.0 to 1.4 lbs/ft³ at CCAF and 1.2 to 1.6 lbs/ft³ at UGRAF which was well above the design criteria of 0.76 lbs/ft³ (Table 2). The flows at UGRAF (301 gpm) were well below the system maximum design of 625 gpm (Table 2). These low flows in combination with the freezing temperatures may have caused the pipe to freeze solid that resulted in the loss of fish. The start of the acclimation in 2002 occurred during very extreme environmental conditions (low temperatures). This overloading of the raceways, early acclimation timing, and catastrophic loss was addressed by co-managers in preparation for the 2003 acclimation. It was decided that there will be 2 acclimation periods to achieve the designed density loading, the first will start later in the spring to allow the extreme low temperatures to subside, and more personnel will be made available to combat any extreme temperatures that may occur.

Maintenance and repair activities were conducted at the acclimation facilities in 2002. Facility maintenance work consisted of snow removal, painting of building, installation of backup water supply system, construction of steps to intake area, improvements to raceway standpipes, removal of gravel from intake area, and complete overhaul of 2 travel trailers. Montgomery-Watson-Harza (MWH) completed construction activities to both of the acclimation facilities and the CCACF in 2002. Their work included installation of larger intake manifold, new inflow valves on each raceway, new manifold blowout valve, and handrails and grating around raceways.

Table 2. Raceway fish density and flow data for Catherine Creek and the Upper Grande Ronde acclimation facilities before volitional release in 2002.

	Raceway			
	1	2	3	4
Catherine Creek				
No. of fish	57,003	35,000	49,456	39,453
Total lbs.	2,946	1,977	2,695	2,150
Mortality	56	441	54	18
Density lbs/ft ³	1.4	1.0	1.3	1.0
Flow gpm	500	500	500	500
Upper Grande Ronde				
No. of fish	50,255	50,018	51,573	50,112
Total lbs.	2,436	2,727	3,325	3,116
Mortality	139	125	124	50,112
Density lbs/ft ³	1.2	1.3	1.6	1.5
Flow gpm	301	301	301	301

Adult Collections

The predicted spring chinook salmon return to Catherine Creek for 2002 was 750 (600 natural + 150 captive returns). Based on these predictions the sliding scale called for retaining 20% of the adult (age 4 and 5) returning natural population. There was no conventional hatchery program until the 2001 broodyear so all returning hatchery fish were of captive broodstock origin and were not to be taken for broodstock. Natural jacks were collected for broodstock at a rate of 1 jack for every 5 males in the broodstock.

The predicted return for the Upper Grande Ronde spring chinook salmon population was 50 (40 natural + 10 captive returns). Based on these predictions the sliding scale called for retaining 50% of the adult (age 4 and 5) returning natural production. There was no conventional hatchery program until the 2001 broodyear so all returning hatchery fish were of captive broodstock origin and were not to be taken for broodstock. Natural jacks were collected for broodstock at a rate of 1 jack for every 5 males in the broodstock.

The CCACF was put into operation on 12 March 2002. The first adult summer steelhead was captured on 14 March. A total of 256 adult summer steelhead were trapped from 14 March to 6 June 2002 (Figure 7, Table 3). One adipose-clipped fish was captured on 4 May 2002. Peak arrival at the trap was the week of 15 April with a smaller second peak the week of 6 May. Four previously trapped fish, as indicated by the presence of an opercle mark, were trapped and released, and 7 previously trapped and 4 non-trapped kelts were recovered dead on the weir. There was also an unknown number of live kelts that passed downstream over the weir without handling.

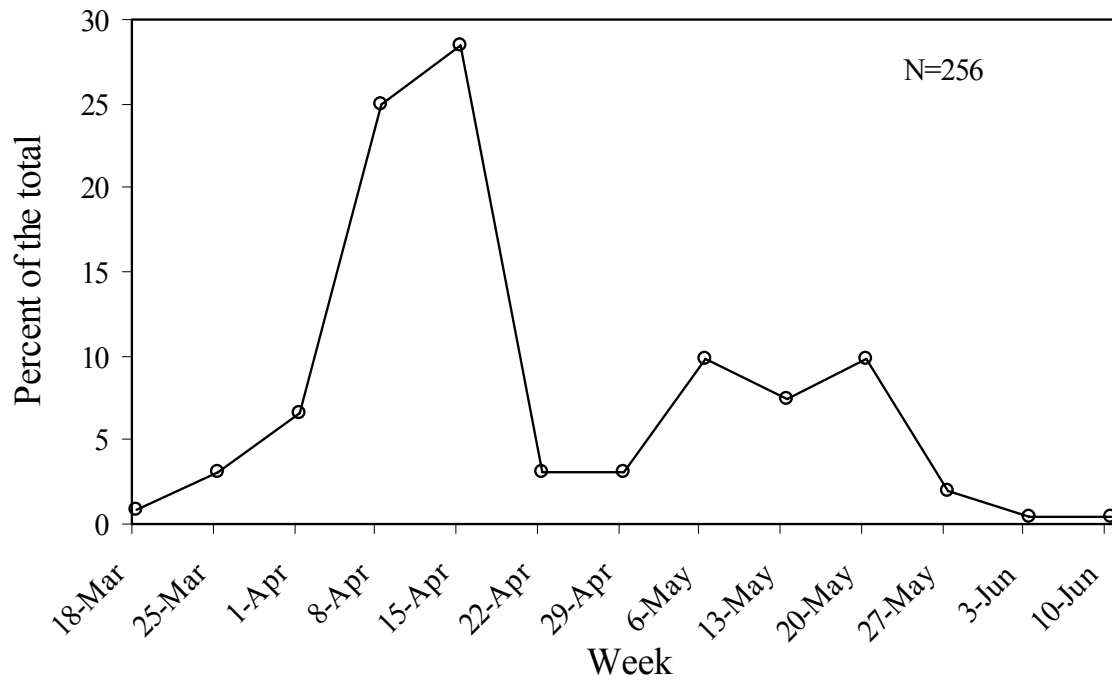


Figure 7. Summer steelhead arrival timing at the Catherine Creek adult collection facility in 2002.

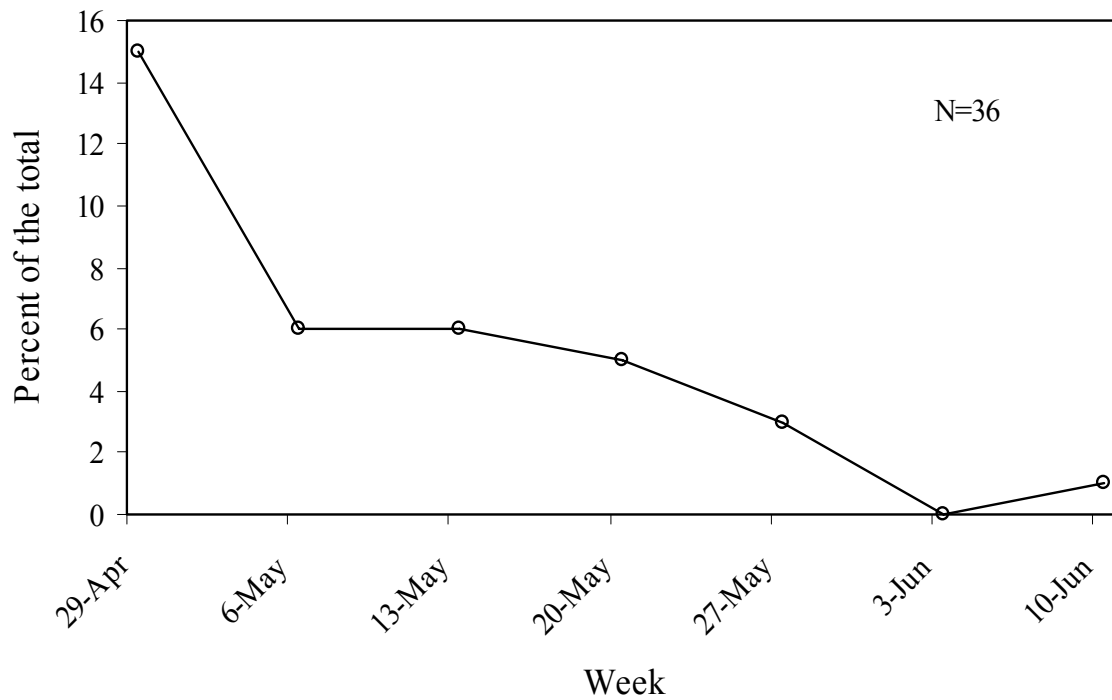


Figure 8. Summer steelhead arrival timing at the Upper Grande Ronde adult collection facility in 2002.

Table 3. Summer steelhead trap capture data from the Catherine Creek adult collection facility in 2002. Trapping began 12 March and ended 13 August.

Week	Trap Capture		Trap Capture	
	First time	Reruns	Recovery	Recapture
18-Mar	2			
25-Mar	8			
1-Apr	17			
8-Apr	64	1		
15-Apr	73			1
22-Apr	8			
29-Apr	8			2
6-May	25		1	
13-May	19			1
20-May	25			
27-May	5	3	1	
3-Jun	1			
10-Jun	1			2
17-Jun	0			1
24-Jun	0			
1-Jul	0		1	
8-Jul	0			
15-Jul	0			
22-Jul	0			
29-Jul	0		1	
Totals	256	4	4	7

Table 4. Summer steelhead trap capture data from the Upper Grande Ronde adult collection facility in 2002. Trapping began 22 April and ended 24 July.

Week	Trap Capture		Trap Capture	
	First time	Reruns	Recovery	Recapture
29-Apr	15		1	
6-May	6		1	
13-May	6		0	
20-May	5		4	1
27-May	3	1	3	0
3-Jun	0		6	3
10-Jun	1		10	3
17-Jun	0		3	0
24-Jun	0			2
1-Jul	0			
	36	1	28	9

The UGRACF was put into operation on 22 April 2002. The first adult summer steelhead was captured on 24 April 2002. A total of 36 adult summer steelhead were trapped and released from 24 April to 6 June 2002 (Figure 8, Table 4). One left-ventral fin-clipped hatchery fish was recovered on the weir on 2 May 2002. Peak arrival at the trap was the week of 29 April which was only 1 week after weir installation. One previously trapped fish was trapped and released, and 9 previously trapped and 28 non-trapped kelts were recovered dead on the weir. There was also an unknown number of live kelts that passed downstream over the weir without handling.

The first adult spring chinook salmon was captured at CCACF on 20 May 2002. A total of 312 spring chinook salmon were trapped from 20 May to 31 July 2002 (Figure 9, Table 5). There was 162 age 4 and 5 and 8 age 3 unmarked and 131 adult and 11 jack hatchery spring chinook salmon. Peak arrival at the trap was the week of 17 June for both marked and unmarked fish (Figure 10). By peak arrival, 73.3% of the unmarked fish had been trapped compared to 62.7% of the marked fish. There was 1 mortality (adipose-clipped) in the trap on 15 June. Four carcasses (2 males, 2 females) were recovered on the weir and 3 of the carcasses had been previously handled at the trap and all had signs of headburn.

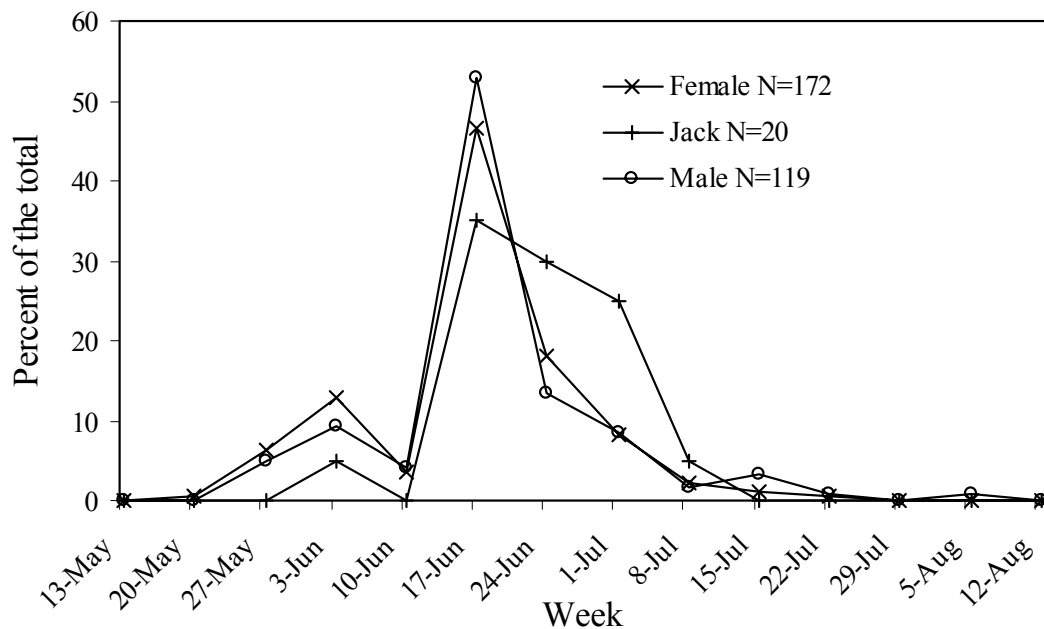


Figure 9. Spring chinook salmon arrival timing at the Catherine Creek adult collection facility in 2002.

Table 5. Spring chinook salmon trap capture, transport, and spawning data for the Catherine Creek stock at the adult collection facility and Lookingglass Hatchery in 2002. Trapping began 12 March and ended 13 August.

Week	<u>Trap Capture</u>		Brood hailed	Trap mort	<u>Lookingglass Hat.</u>	
	Hatchery	Natural			Female spawned	Female mort
13-May	0	0				
20-May	0	1				
27-May	13	4	1			
3-Jun	25	9	6			
10-Jun	6	5	2			
17-Jun	80	70	26	1		
24-Jun	24	29	1			
1-Jul	10	19	1			
8-Jul	5	2	1			1
15-Jul	5	2				
22-Jul	1	1				
29-Jul	0	0				
5-Aug	1	0				
12-Aug	0	0				
19-Aug	0	0			7	
26-Aug					4	
2-Sep					7	
9-Sep					2	
Totals	170	142	38	1	20	1

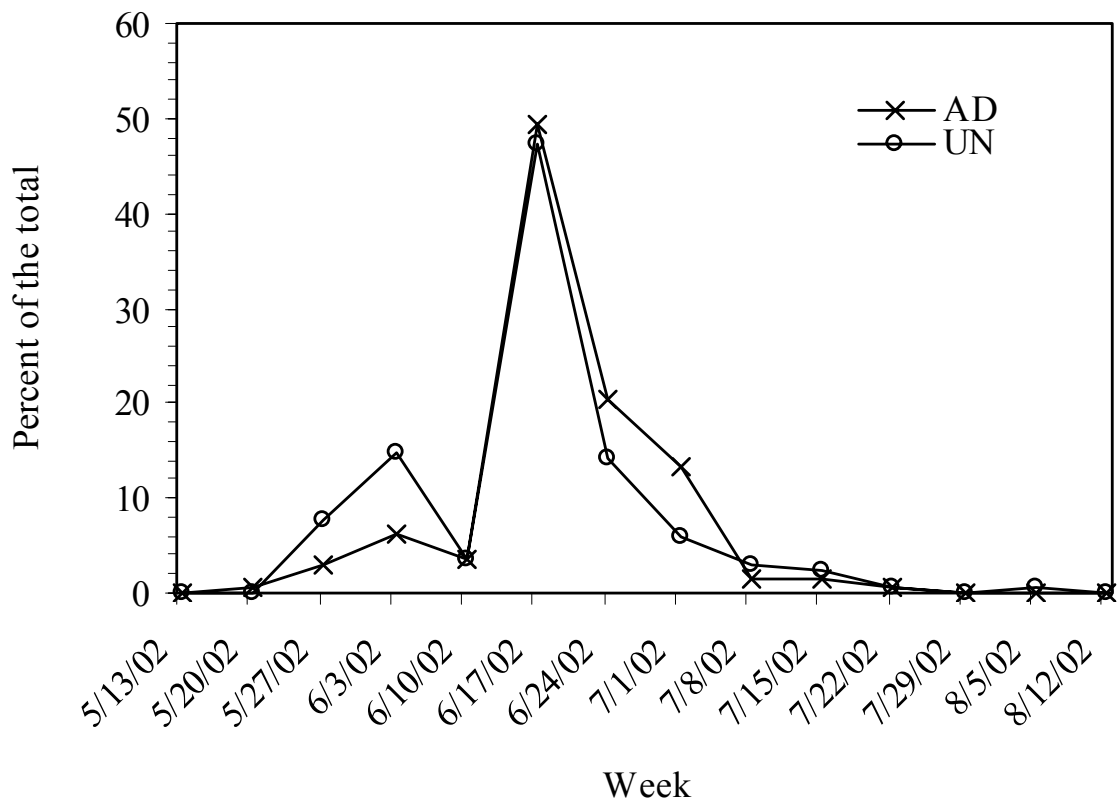


Figure 10. Hatchery and natural spring chinook salmon arrival timing at the Catherine Creek adult collection facility in 2002.

The first adult spring chinook salmon was captured at UGRACF on 30 May 2002. A total of 105 spring chinook salmon were trapped from 30 May to 13 July 2002 (Figure 11, Table 6). There was a total of 104 age 4 and 5 and 1 age 3 spring chinook salmon trapped. There was 101 age 4 and 5 and 1 age 3 unmarked and 3 adult hatchery spring chinook salmon. Peak arrival at the trap for the unmarked fish consisted of 3 descending peaks, 10 June, 24 June, and 15 July. The peak arrival for the marked fish was the week of 24 June (N=3). By the week of the second peak arrival, 72.5% of the unmarked fish had been trapped. There were 2 unmarked trap mortalities on 13 July and 1 previously trapped (initially trapped on 5 June) adipose-clipped fish was recovered on the weir on 25 June.

The broodstock collected and transported from CCACF was entirely from the unmarked fish trapped. None of the captive broodstock returns, which comprised the entire return of hatchery fish, were collected for broodstock. Broodstock was collected systematically over the entire return from 26 May to 15 July 2002. Every 5th adult male and female sampled was taken to LFH for broodstock. One unmarked jack was collected for every 5 adult males that were taken to LFH. Early in the run it looked as though the pre-season estimate of 750 adults returning to Catherine Creek and the 20% broodstock collection was too high and should have been less than 250 adults and 40%. Beginning 5 June 2002 broodstock was collected at a rate of 40%.

Two weeks after this decision was made there was a sharp increase in the number of fish trapped which put the total over 250 fish which would move the broodstock collection back to 20% (Figure 9). Because broodstock was collected near the peak of the return at 40% the collection permit (20%) was exceeded by 15%. Since the broodstock taken to LFH were PIT-tagged, it was decided to return fish (9) back to Catherine Creek from the arrival time that the permit was exceeded. A total of 33 age 4 and 5 and 5 age 3 fish were transported to LFH for broodstock which was 22.5% of the natural return trapped (Table 6). The sex estimation of the fish passed above the weir was validated by the sex of the fish taken for broodstock. When a fish was called a jack, male, or female at the weir we were correct 100, 73.6, and 93.7% of the time respectively. Fish that were actually females, tended to be called males at the weir.

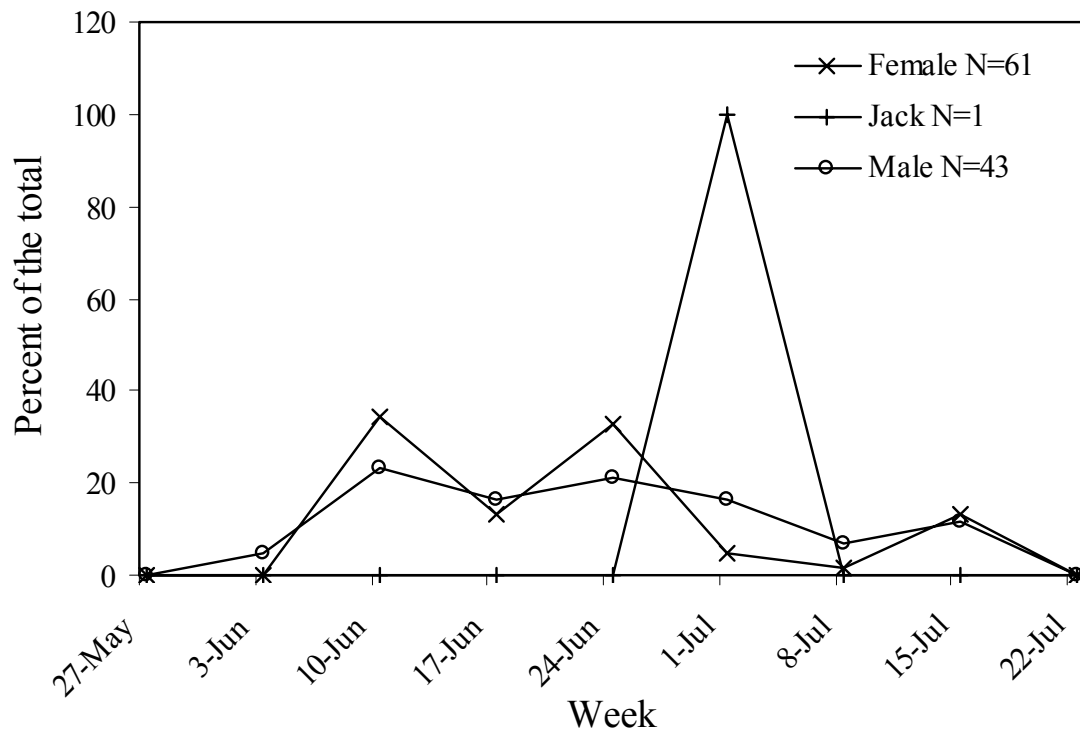


Figure 11. Spring chinook salmon arrival timing at the Upper Grande Ronde adult collection facility in 2002.

Table 6. Spring chinook salmon trap capture, transport, and spawning data for the Grande Ronde Creek stock at the adult collection facility and Lookingglass Hatchery in 2002. Trapping began 22 April and ended 24 July.

Week	Trap Capture		Brood hailed	Trap mort	Lookingglass Hat.	
	Hatchery	Natural			Female spawned	Female mort
13-May	0	0				
20-May	0	0				
27-May	0	0				
3-Jun	2	0	1			
10-Jun	30	1	15			
17-Jun	15	0	7			
24-Jun	27	2	13			
1-Jul	11	0	5			
8-Jul	4	0	3			
15-Jul	13	0	5	2		
22-Jul	0	0				
29-Jul	0	0				
5-Aug						
12-Aug						
19-Aug					8	
26-Aug					3	1
2-Sep					6	5
9-Sep					4	
Totals	102	3	49	2	21	6

The broodstock collected and transported from UGRACF was also made up entirely of unmarked fish. Broodstock was collected systematically over the entire return from 30 May to 12 July 2002. Every other adult male and female sampled was taken to LFH (50%) for broodstock. The jack collection was similar to that at CCACF, although only 1 natural jack was trapped. A total of 48 age 4 and 5 and 1 age 3 fish were transported to LFH for broodstock which was 48.0% of the natural return trapped (Table 6). The sex estimation of the fish passed above the weir was validated by the sex of the fish taken for broodstock. When a fish was called a jack, male, or female at the weir we were correct 100, 84.0, and 100% of the time respectively. Fish that were actually females, tended to be called males at the weir.

The sliding scale management plan (Appendix Table 1) is a tool used to determine spring chinook salmon disposition in the Grande Ronde River Basin. There are, however, some problems with the implementation of the scale. The broodstock collection rates are grouped by return numbers (<250, 250-500, >500). The difference between 249 and 250 fish is the collection of 40 and 20% of the return respectively. Currently there is no accurate predictor of the actual return to each

basin and the weirs used to capture broodstock have not been 100% effective, these two factors can cause problems when trying to set the broodstock collection percentage. For example, if the return is lower (175) than what was predicted (300) you would begin broodstock collection at a rate of 20% when in actuality the return was much lower and you could have been collecting broodstock at 40%. At the low numbers that have been captured, the difference between these two percentages can mean a lot of lost production. The low trap efficiency can also make it look like the return is lower than predicted, so the collection rate is increased to account for the fewer fish. During spawning ground surveys unpunched carcasses that are recovered and the number of redds indicate that the original prediction was correct and the collection percentage has exceeded the permit. Including hatchery fish (especially captive broodstock progeny) in the total escapement without the acknowledgement of the hatchery:wild ratio can again cause problems with the collection percentage. For example, if 300 fish return and the hatchery:wild ratio is 200 and 100 adults and we are limited to keeping the hatchery fish passed to no more than 70% of the unmarked fish passed, 104 hatchery fish would be removed from the population lowering the escapement to less than 250. This escapement level should have been at the 40% collection rate.

Weekly maximum temperatures at the CCACF ranged from 10.3°C the week of 29 April to 23.1 °C the weeks of 15 and 29 July (Figure 12). Weekly minimum temperatures at the trap ranged from 2.4°C the week of 13 May to 13.1 °C the weeks of 22 and 29 July. The hourly temperatures at the adult trap during the period of operation showed that the lowest water temperatures usually occurred between 0600 and 1000 hours and the highest water temperatures usually occurred between 1500 and 1900 hours (Figure 13). High stream flows caused problems with the weir the first weeks of May. These high flows damaged the hydraulics of the weir keeping it from being raised fully above the surface of the water. This allowed fish to pass unhandled as evidenced by the recovery of 8 unpunched summer steelhead kelts on the weir and 52 unpunched spring chinook salmon carcasses on spawning ground surveys (2002 Spawning Ground Survey Results, ODFW, unpublished). Modifications were made to the weir (removal of small rocks immediately above weir, shortened height of weir, installed cable to support weir) to prepare for the 2003 trapping season.

Weekly maximum temperatures at the UGRACF ranged from 11.5°C the week of 29 April to 28.3 °C the week of 15 July (Figure 14). Weekly minimum temperatures at the trap ranged from 0.5°C the week of 13 May to 10.9 °C the week of 1 July. The hourly temperatures at the adult trap during the period of operation showed that the lowest water temperatures usually occurred between 0500 and 0900 hours and the highest water temperatures usually occurred between 1300 and 1700 hours (Figure 15). The high spring flows were not a problem with the new floating weir used at the UGRACF in 2002. This was evidenced by the fact that only 1 unpunched spring chinook salmon carcass was recovered above the weir.

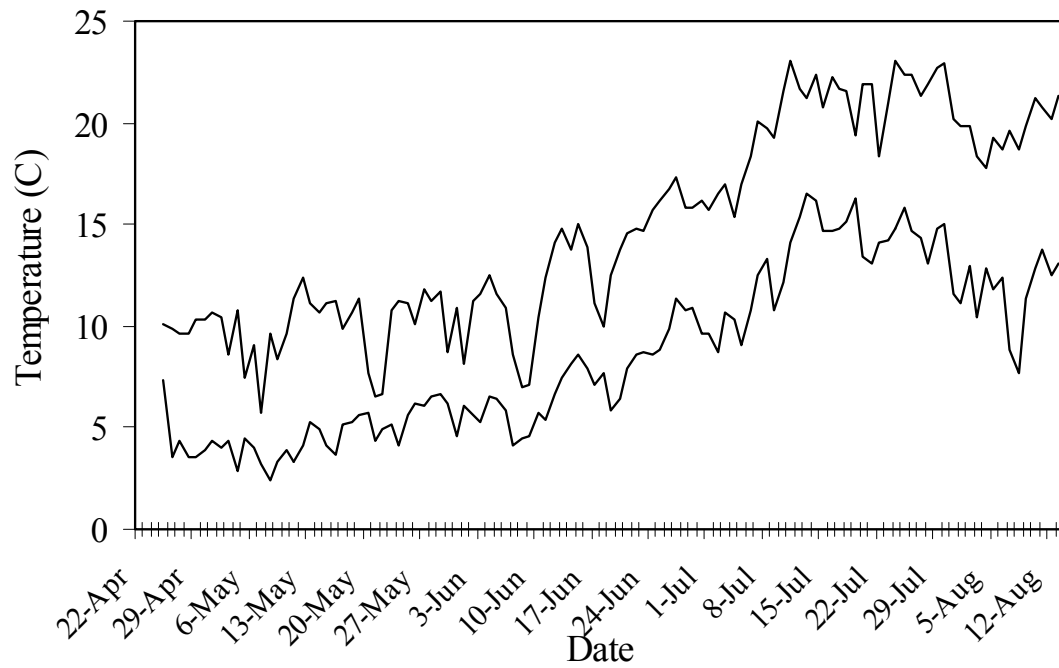


Figure 12. Daily maximum and minimum temperatures (recorded hourly) at the Catherine Creek adult collection facility in 2002.

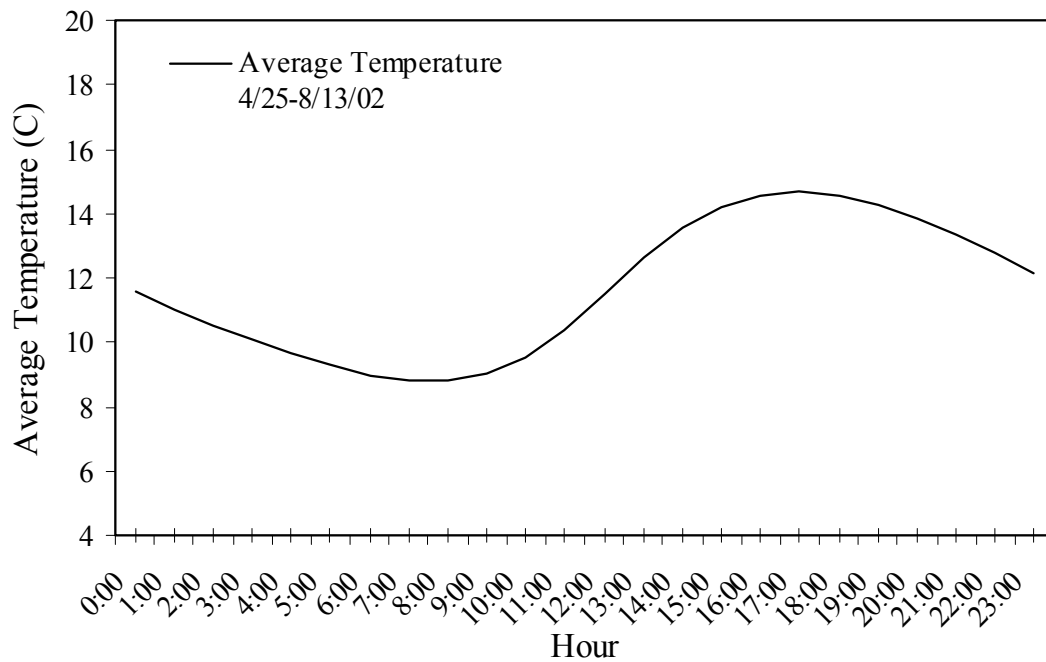


Figure 13. Average hourly temperature at the Catherine Creek adult collection facility in 2002.

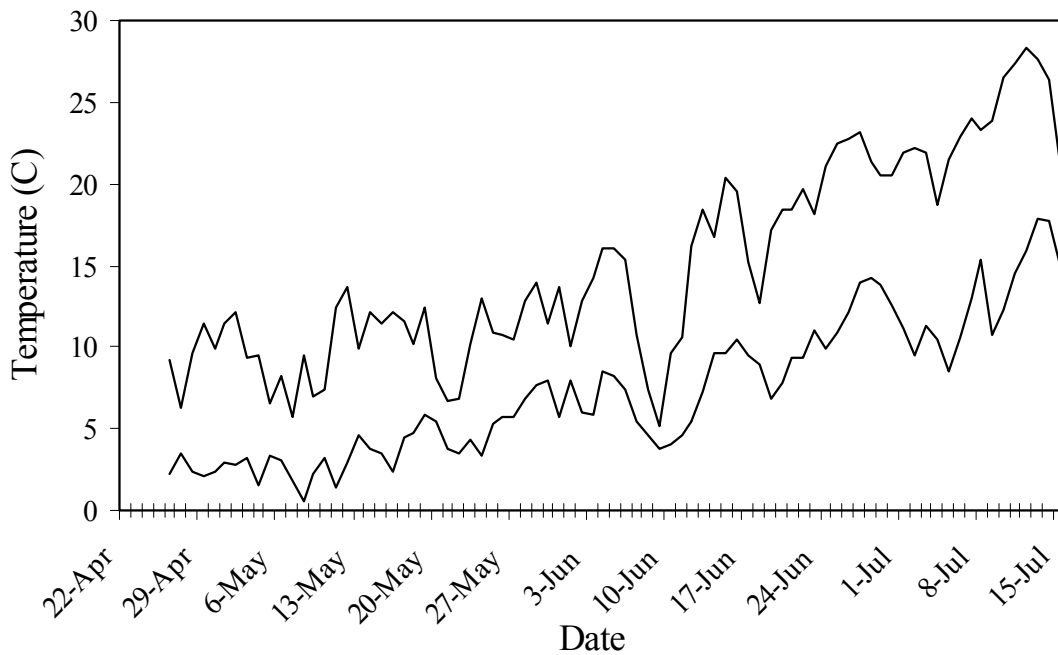


Figure 14. Daily maximum and minimum temperatures (recorded hourly) at the Upper Grande Ronde adult collection facility in 2002.

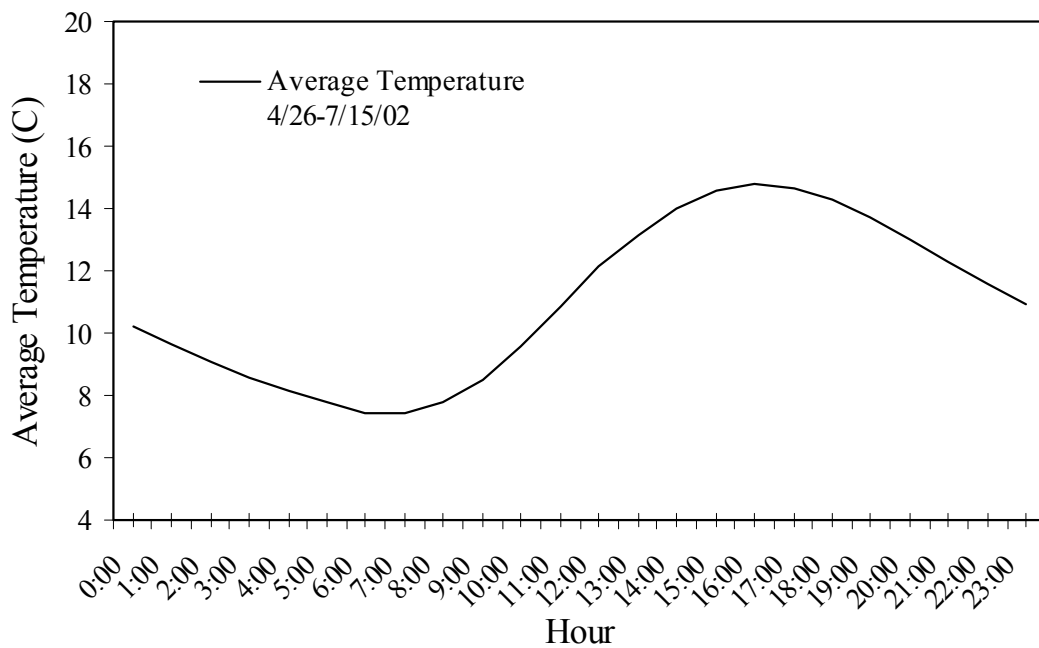


Figure 15. Average hourly temperature at the Upper Grande Ronde adult collection facility in 2002.

Six weekly spring chinook spawning surveys were conducted below the weir on Catherine Creek beginning 11 July 2002. During these surveys only 2 live fish were observed below the weir on 25 July and no carcasses were recovered. The trap was removed from Catherine Creek on 13 August. Surveys conducted by ODFW above and below the weir in 2002 resulted in the recovery of 143 carcasses above the weir, of which 91 were punched (64% trap efficiency).

On the Upper Grande Ronde River only two weekly spring chinook surveys were conducted from 1 mile above the weir to 1 mile below the weir on 16 and 22 July 2002. No live fish were observed and 2 previously trapped carcasses were recovered above the weir. Three 3 live fish were observed and 6 carcasses were recovered (1 previously trapped) below the weir on 16 July. No live fish were observed above or below the weir and 1 carcass was recovered below the weir on 22 July. Seven of the 9 carcasses recovered were pre-spawn females. Because of high water temperatures and the fact that no live fish were observed immediately below the weir, the weir and trap were removed from the river on 24 July. Surveys conducted by ODFW above and below the weir in 2002 resulted in the recovery of only 9 carcasses above the weir, of which, 8 were punched (89% trap efficiency).

Maintenance and repair activities were conducted at the adult collection facilities in 2002. Facility maintenance work consisted of construction of trapbox and steps to weir, maintenance of weir, removal of gravel from the fishway, and weed abatement at CCACF. Maintenance work at UGRACF consisted of installation and removal of the floating weir panels and trapbox. We received the new trapbox after the trapping season had ended and constructed it in the shop to determine needs for 2003.

Broodstock Activities

Lookingglass Hatchery

A total of 20 females, 13 males, and 3 jacks were spawned from the Catherine Creek stock spring chinook salmon at LFH in 2002. Seven of the 9 family groups were 2 females with 2 males. The remaining 2 family groups were 3 females with 2 males. There were 4 males used in 2 different family groups and 2 of the 3 jacks were combined and spawned as 1 male. There was 1 female mortality (pre-spawn) at the hatchery and 1 male (killed not spawned) that did not have viable gametes. The peak spawning dates at LFH occurred on 16 and 30 August 2002 and there was no relationship between arrival at the trap and spawn timing at LFH (Figure 16).

A total of 21 females, 18 males, and 1 jack were spawned at LFH in 2002. Seven of the 10 family groups were 2 females with 2 males. The remaining 3 family groups were 3 females with 2 males, 2 females with 1 male, and 2 females with 3 males. There was 1 male used in 2 different family groups. There were 2 female and 3 male mortalities at the hatchery and 4 females that died overnight while being held in spawning tubes. These 4 females were spawned with recycled males but after the eggs were shocked there was 100% mortality. The peak spawning dates at LFH

occurred on 16 and 30 August 2002 and there was no relationship between arrival at the trap and spawn timing at LFH (Figure 17).

A post spawning season technical session was conducted at LFH in November of 2002. The meeting was designed to allow people involved with the spawning process to discuss improvements or changes for the next year's spawning. Some of the improvements/changes to be made next year include making the sorting and spawning of fish happen on the same day, keeping males and females separated in the same circular pond after reinjection to speed the ripeness sorting process, spawning the females in the captive brood building, and developing the matrix on the day of the spawn after sorting.

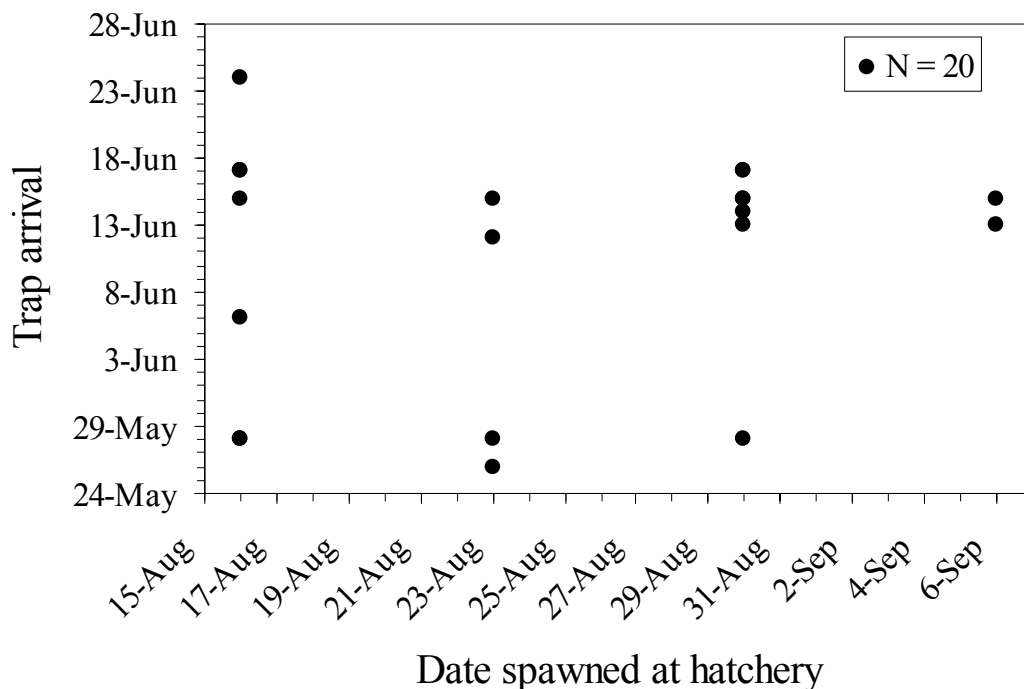


Figure 16. Spawning timing at Lookingglass Hatchery compared to the arrival timing of those fish at the Catherine Creek adult collection facility in 2002.

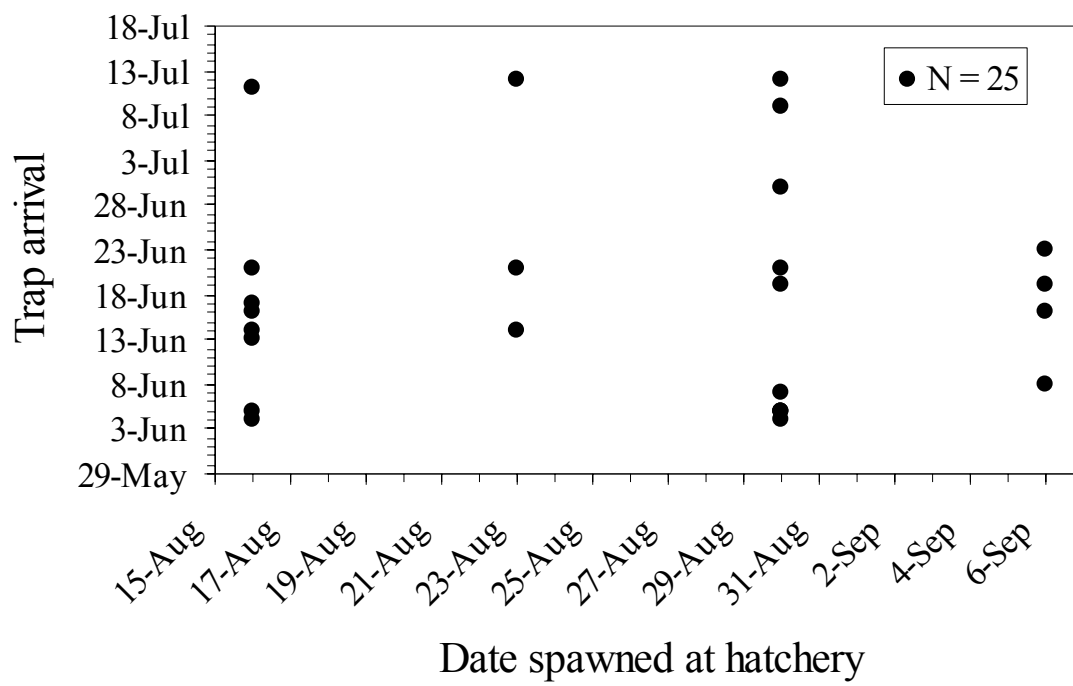


Figure 17. Spawning timing at Lookingglass Hatchery compared to the arrival timing of those fish at the Upper Grande Ronde adult collection facility in 2002.

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APPENDIX TABLES

Appendix Table 1. Sliding Scale Management Plan for the Catherine Creek and Upper Grande Ronde Spring Chinook Artificial Propagation Program.

Estimated total adult escapement to the Catherine Creek mouth (hatchery plus natural) ^a	Ratio of hatchery to natural adults at the mouth	Maximum % of natural adults to retain for broodstock	% of conventional hatchery adults to retain for broodstock ^b	% of adults released above the weir that can be of hatchery origin	Minimum % of broodstock of natural origin	% Strays allowed above the weir ^c
UGR	Any	Up to 50	Up to 100	Up to 100	^d	≤5
CC						
<250	Any	40	40	^d	^d	≤5
251-500	Any	20	20	≤70	≥20	≤5
>500	Any	≤20	d	≤50	≥30	≤5
^a Pre-season estimate of total escapement ^b Conventional hatchery adults only, all captive brood adults released to spawn naturally or outplanted ^c For hatchery adults originating from different gene conservation groups (Rapid River stock or strays from outside the Grande Ronde basin) ^d Not decision factor at this level of escapement, percentage determined by other criteria ^e Not to exceed 130,000 smolt production initially						

Appendix Table 2. Acclimation data for Catherine Creek and the Upper Grande Ronde facilities.

Facility	Fish received	Size fish/lb	Accl. period	Volit. began	Feed Fed (lb)	Total mort.	%	Temp.°C		DO mg/l		Est. Vol. migration
								min	max	min	max	
CC 00	38,009	23.6	2/28-4/18	4/2	474	29	0.1	0.2	9.3	8.2	14.4	6,842
CC 01	137,588	19.6	3/8-4/16	4/2	1,296	914	0.7	0.5	9.6	8.9	13.9	^a
GR 00	1,540	19.4	2/28-3/14	(none)	1	4	0.3	-0.5	2.7	-	-	(none)
GR 01	2,570	13.9	2/27-3/27	(none)	8	26	1.0	-0.7	3.8	8.7	12.1	(none)

^a Problems with PIT tag readers made it impossible to estimate accurately the number of PIT tagged fish leaving volitionally or during forceout from the Catherine Creek facility. Actual PIT tags detected during the volitional release period were 290; tags detected during the forceout were 6,862.

Appendix Table 3. Daily summer steelhead trapping data from the Catherine Creek adult collection facility in 2002.

Date	Total	Trapped		Sacrificed/mort		Recaptures at trap	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
15-Mar	1	0	1	0	0	0	0
17-Mar	1	0	1	0	0	0	0
21-Mar	1	0	1	0	0	0	0
22-Mar	1	0	1	0	0	0	0
24-Mar	4	0	4	0	0	0	0
25-Mar	2	0	2	0	0	0	0
26-Mar	2	0	2	0	0	0	0
27-Mar	7	0	7	0	0	0	0
29-Mar	3	0	3	0	0	0	0
31-Mar	3	0	3	0	0	0	0
MAR	25	0	25	0	0	0	0
1-Apr	2	0	2	0	0	0	0
2-Apr	7	0	7	0	0	0	0
3-Apr	14	0	14	0	0	0	0
4-Apr	6	0	6	0	0	0	0
5-Apr	28	0	28	0	0	0	0
6-Apr	6	0	6	0	0	0	0
8-Apr	14	0	14	0	0	0	0
9-Apr	3	0	3	0	0	0	0
10-Apr	13	0	13	0	0	0	0
11-Apr	19	0	19	0	0	0	0
13-Apr	19	0	19	0	0	0	0
14-Apr	12	0	12	0	0	0	0
15-Apr	7	0	7	0	0	0	0
17-Apr	8	0	8	0	0	0	0
27-Apr	3	0	3	0	0	0	0
29-Apr	5	0	5	0	0	0	0
30-Apr	1	0	1	0	0	0	0
APR	167	0	167	0	0	0	0

Appendix Table 3 (cont.). Daily summer steelhead trapping data from the Catherine Creek adult collection facility in 2002.

Date	Total	Trapped		Sacrificed/mort		Recaptures at trap	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
2-May	12	0	12	0	0	0	1
3-May	6	0	6	0	0	0	0
4-May	4	1	3	1	0	0	0
5-May	1	0	1	0	0	0	0
6-May	1	0	1	0	0	0	0
8-May	1	0	1	0	0	0	1
10-May	6	0	6	0	0	0	0
11-May	1	0	1	0	0	0	0
13-May	11	0	11	0	0	0	0
14-May	7	0	7	0	0	0	0
15-May	7	0	7	0	0	0	0
16-May	1	0	1	0	0	0	0
17-May	3	0	3	0	0	0	0
18-May	1	0	1	0	0	0	0
19-May	3	0	3	0	0	0	0
20-May	3	0	3	0	0	0	0
21-May	1	0	1	0	0	0	0
22-May	1	0	1	0	0	0	0
24-May	1	0	1	0	0	0	0
25-May	1	0	1	0	0	0	2
27-May	1	0	1	0	0	0	1
28-May	1	0	1	0	0	0	0
MAY	74	1	73	1	0	0	5
5-Jun	0	0	0	0	0	0	0
6-Jun	1	0	1	0	0	0	0
13-Jun	0	0	0	0	0	0	0
25-Jun	0	0	0	0	0	0	0
JUNE	1	0	1	0	0	0	0
Totals	267	1	266	1	0	0	5

Appendix Table 4. Daily spring chinook salmon trapping data from the Catherine Creek adult collection facility in 2002.

Date	Total	Trapped				Sacrificed/mort				Brood collected			
		Adults		Jacks		Adults		Jacks		Adults		Jacks	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
20-May	1	1	0	0	0	0	0	0	0	0	0	0	0
25-May	2	0	2	0	0	0	0	0	0	0	0	0	0
26-May	6	1	5	0	0	0	0	0	0	0	1	0	0
27-May	9	3	6	0	0	0	0	0	0	0	0	0	0
28-May	25	6	19	0	0	0	0	0	0	0	4	0	0
29-May	2	0	2	0	0	0	0	0	0	0	1	0	0
30-May	4	1	2	0	1	0	0	0	0	0	0	0	0
31-May	2	2	0	0	0	0	0	0	0	0	0	0	0
MAY	51	14	36	0	1	0	0	0	0	0	6	0	0
3-Jun	1	0	1	0	0	0	0	0	0	0	1	0	0
4-Jun	1	1	0	0	0	0	0	0	0	0	0	0	0
5-Jun	3	1	2	0	0	0	0	0	0	0	0	0	0
6-Jun	6	2	4	0	0	0	0	0	0	0	3	0	0
10-Jun	1	1	0	0	0	0	0	0	0	0	0	0	0
11-Jun	5	2	3	0	0	0	0	0	0	0	1	0	0
12-Jun	7	6	1	0	0	0	0	0	0	0	1	0	0
13-Jun	16	7	9	0	0	0	0	0	0	0	3	0	0
14-Jun	18	3	12	0	3	0	0	0	0	0	5	0	2
15-Jun	51	25	23	0	3	1	0	0	0	0	10	0	1
17-Jun	53	27	22	0	4	0	0	0	0	0	9	0	2
18-Jun	1	0	1	0	0	0	0	0	0	0	0	0	0
19-Jun	6	4	2	0	0	0	0	0	0	0	0	0	0
20-Jun	3	1	1	1	0	0	0	0	0	0	0	0	0
21-Jun	11	5	5	1	0	0	0	0	0	0	0	0	0
22-Jun	8	4	3	1	0	0	0	0	0	0	0	0	0
24-Jun	24	11	11	2	0	0	0	0	0	0	1	0	0
25-Jun	5	3	0	2	0	0	0	0	0	0	0	0	0
26-Jun	3	2	1	0	0	0	0	0	0	0	0	0	0
27-Jun	4	2	1	1	0	0	0	0	0	0	1	0	0
28-Jun	8	2	5	1	0	0	0	0	0	0	0	0	0
29-Jun	2	1	1	0	0	0	0	0	0	0	0	0	0
JUN	237	110	108	9	10	1	0	0	0	0	35	0	5

Appendix Table 4 (cont.). Daily spring chinook salmon trapping data from the Catherine Creek adult collection facility in 2002.

Date	Total	Trapped				Sacrificed/mort				Brood collected			
		Adults		Jacks		Adults		Jacks		Adults		Jacks	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
1-Jul	7	4	2	1	0	0	0	0	0	0	0	0	0
6-Jul	2	0	1	0	1	0	0	0	0	0	0	0	0
8-Jul	5	2	3	0	0	0	0	0	0	0	0	0	0
9-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0
11-Jul	1	1	0	0	0	0	0	0	0	0	0	0	0
12-Jul	2	1	1	0	0	0	0	0	0	0	0	0	0
13-Jul	2	0	2	0	0	0	0	0	0	0	0	0	0
14-Jul	0	0	0	0	0	0	0	0	0	0	0	0	0
15-Jul	1	0	1	0	0	0	0	0	0	0	1	0	0
16-Jul	1	0	1	0	0	0	0	0	0	0	0	0	0
17-Jul	1	1	0	0	0	0	0	0	0	0	0	0	0
31-Jul	1	0	1	0	0	0	0	0	0	0	0	0	0
JUL	23	9	12	1	1	0	0	0	0	0	1	0	0
1-Aug	0	0	0	0	0	0	0	0	0	0	-9	0	0
AUG	0	0	0	0	0	0	0	0	0	0	-9	0	0
Total	311	133	156	10	12	1	0	0	0	0	33	0	5

Appendix Table 5. Daily summer steelhead trapping data from the Upper Grande Ronde adult collection facility in 2002.

Date	Total	Trapped		Sacrificed/mort		Recaptures at trap	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
24-Apr	2	0	2	0	0	0	0
25-Apr	1	0	1	0	0	0	0
26-Apr	6	0	6	0	0	0	0
27-Apr	3	0	3	0	0	0	0
28-Apr	0	0	0	0	0	0	0
29-Apr	3	0	3	0	0	0	0
30-Apr	1	0	1	0	0	0	0
APR	16	0	16	0	0	0	0
1-May	1	0	1	0	0	0	0
3-May	2	0	2	0	0	0	0
5-May	2	0	2	0	0	0	0
8-May	1	0	1	0	0	0	0
13-May	5	0	5	0	0	0	0
14-May	3	0	3	0	0	0	0
15-May	1	0	1	0	0	0	0
17-May	1	0	1	0	0	0	0
23-May	3	0	3	0	0	0	0
26-May	1	0	1	0	0	0	0
MAY	20	0	20	0	0	0	0
6-Jun	1	0	1	0	0	0	0
JUN	1	0	1	0	0	0	0
Totals	37	0	37	0	0	0	0

Appendix Table 6. Daily spring chinook salmon trapping data from the Upper Grande Ronde adult collection facility in 2002.

Date	Trapped					Sacrificed/mort				Brood collected			
	Total	Adults		Jacks		Adults		Jacks		Adults		Jacks	
		Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.	Hat.	Wld.
30-May	1	0	1	0	0	0	0	0	0	0	0	0	0
MAY	1	0	1	0	0	0	0	0	0	0	0	0	0
1-Jun	1	0	1	0	0	0	0	0	0	0	1	0	0
2-Jun	1	0	1	0	0	0	0	0	0	0	0	0	0
3-Jun	3	0	3	0	0	0	0	0	0	0	1	0	0
4-Jun	4	0	4	0	0	0	0	0	0	0	2	0	0
5-Jun	12	1	11	0	0	0	0	0	0	0	6	0	0
6-Jun	3	0	3	0	0	0	0	0	0	0	1	0	0
7-Jun	7	0	7	0	0	0	0	0	0	0	4	0	0
8-Jun	1	0	1	0	0	0	0	0	0	0	1	0	0
10-Jun	1	0	1	0	0	0	0	0	0	0	0	0	0
11-Jun	1	0	1	0	0	0	0	0	0	0	1	0	0
13-Jun	7	0	7	0	0	0	0	0	0	0	3	0	0
14-Jun	6	0	6	0	0	0	0	0	0	0	3	0	0
16-Jun	13	1	12	0	0	0	0	0	0	0	5	0	0
17-Jun	3	1	2	0	0	0	0	0	0	0	1	0	0
18-Jun	3	0	3	0	0	0	0	0	0	0	1	0	0
19-Jun	3	0	3	0	0	0	0	0	0	0	2	0	0
20-Jun	2	0	2	0	0	0	0	0	0	0	1	0	0
21-Jun	5	0	5	0	0	0	0	0	0	0	3	0	0
23-Jun	6	0	5	0	1	0	0	0	0	0	2	0	1
25-Jun	3	0	3	0	0	0	0	0	0	0	1	0	0
27-Jun	1	0	1	0	0	0	0	0	0	0	1	0	0
28-Jun	1	0	1	0	0	0	0	0	0	0	0	0	0
30-Jun	4	0	4	0	0	0	0	0	0	0	3	0	0
JUN	91	3	87	0	1	0	0	0	0	0	43	0	1
7-Jul	1	0	1	0	0	0	0	0	0	0	0	0	0
9-Jul	3	0	3	0	0	0	0	0	0	0	2	0	0
11-Jul	2	0	2	0	0	0	0	0	0	0	1	0	0
12-Jul	5	0	5	0	0	0	0	0	0	0	2	0	0
13-Jul	2	0	2	0	0	0	2	0	0	0	0	0	0
July	13	0	13	0	0	0	2	0	0	0	5	0	0
Totals	105	3	101	0	1	0	2	0	0	0	48	0	1